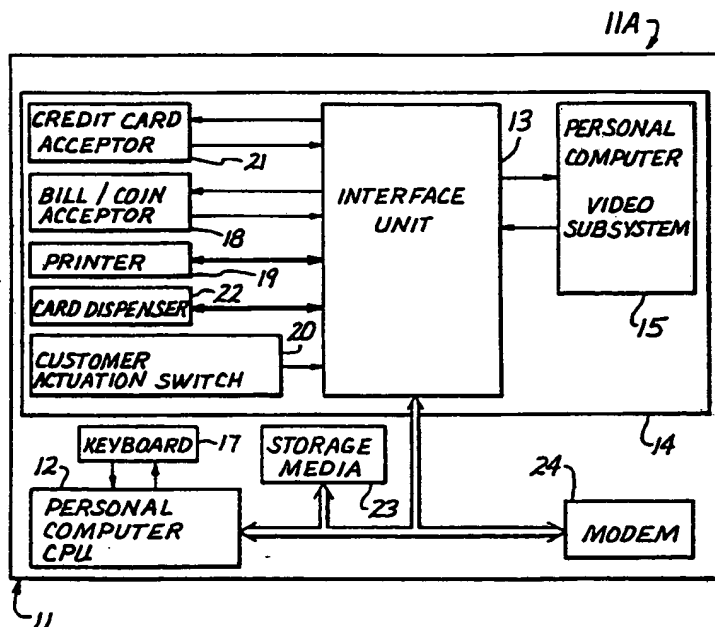




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁵ : G06F 15/20, G07F 11/68, 11/70		A1	(11) International Publication Number: WO 93/08535
			(43) International Publication Date: 29 April 1993 (29.04.93)
(21) International Application Number: PCT/US92/08672 (22) International Filing Date: 9 October 1992 (09.10.92) (30) Priority data: 07/781,010 18 October 1991 (18.10.91) US (71) Applicant: POSTAL BUDDY CORPORATION [US/US]; 4411 Morena Blvd., #103, San Diego, CA 92117 (US). (72) Inventor: GOODMAN, Sidney, R. ; 4411 Morena Blvd., #103, San Diego, CA 92117 (US). (74) Agent: KLEINKE, Bernard, L.; Laff, Whitesel, Conte & Saret, 101 West Broadway, Suite 1580, San Diego, CA 92101 (US).		(81) Designated States: AT, AU, BB, BG, BR, CA, CH, CS, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MG, MN, MW, NL, NO, PL, RO, RU, SD, SE, European pa- tent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, SN, TD, TG). Published <i>With international search report.</i> <i>With amended claims.</i>	

(54) Title: CUSTOMIZED DOCUMENT DISPENSING SYSTEM AND METHOD



(57) Abstract

A self service system (11A) for vending small customized documents (230) includes an input device (17) for receiving and storing customized input information from a customer for producing and vending a customized document (230) according to the requirements of the customer. In response to the receipt of the customized input information, a device (12) generates and supplies cost information to the customer. Responsive to signals indicative of the correct payment being received from the customer, a device (22A) produces the customized documents.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	FR	France	MR	Mauritania
AU	Australia	GA	Gabon	MW	Malawi
BB	Barbados	GB	United Kingdom	NL	Netherlands
BE	Belgium	GN	Guinea	NO	Norway
BF	Burkina Faso	GR	Greece	NZ	New Zealand
BG	Bulgaria	HU	Hungary	PL	Poland
BJ	Benin	IE	Ireland	PT	Portugal
BR	Brazil	IT	Italy	RO	Romania
CA	Canada	JP	Japan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	LJ	Liechtenstein	SK	Slovak Republic
CI	Côte d'Ivoire	LK	Sri Lanka	SN	Senegal
CM	Cameroon	LU	Luxembourg	SU	Soviet Union
CS	Czechoslovakia	MC	Monaco	TD	Chad
CZ	Czech Republic	MG	Madagascar	TG	Togo
DE	Germany	ML	Mali	UA	Ukraine
DK	Denmark	MN	Mongolia	US	United States of America
ES	Spain			VN	Viet Nam
FI	Finland				

Customized Document Dispensing System and Method.**Cross Reference to Related Applications**

This patent application is a continuation-in-part of
5 U.S. patent application, Serial No. 07/284,065 filed
December 13, 1989, U.S. patent application Serial
No. , filed October 30, 1989, entitled "CHANGE OF
ADDRESS SYSTEM AND METHOD OF USING SAME", and U.S. patent
application Serial No. , filed October 30,
10 1989, entitled "FOREIGN CHARACTER TERMINAL AND METHOD OF
USING SAME", said applications being incorporated herein
by reference and being assigned to the same assignee.

Technical Field

This invention relates in general to a document
15 vending system and method of using it. The invention
more particularly relates to a self-service system for
vending small customized documents, such as business
cards, change of address post cards, wedding invitations,
and the like.

Background Art

Modernly, there are numerous service and product
companies being formed on a daily basis. In this regard,
it has become common place for the owners of such
businesses to advertise their products and services
25 immediately, in order to attract a customer base. Such
advertisements, however, are usually expensive, and thus
for the smaller businesses, may become cost prohibitive.
Therefore, most new and smaller businesses limit their
initial advertising efforts to business cards, telephone
30 advertisements, and other promotional techniques such as
discount coupons and the like.

While such advertising efforts may have been
generally satisfactory, the costs associated with even
these advertising promotions has limited many businesses
35 in their marketing efforts. For example, in order for a

business to obtain new business cards, advertising cards, or the like, the owner or proprietor of the business is usually required to order a minimum number of the small sized cards, usually in the range of 500 to 1,000 cards. 5 These minimum quantities are usually required, because the printing establishments preparing the small documents, must recoup printing set-up costs in customizing large numbers of small documents, such as business cards.

10 Moreover, the equipment utilized by the printing establishment is complex in order to handle the printing of large numbers of such small documents. In this regard, the investment made in acquiring such specialized equipment must also be recovered, each time it is used. 15 Thus, new businesses or existing small businesses, are required to purchase a relatively large number of small documents such as flyers, discount coupons or business cards, for their advertising efforts, even though many of the documents may not be needed by the purchaser, and 20 thus may go unused. Notwithstanding, the customer is required to pay for the large minimum number of the small documents, and spend additional sums of money for the excess documents.

Therefore, it would be highly desirable to be able 25 to supply a user with a small quantity of customized documents, at a relatively inexpensive cost.

Another problem associated with a small business utilizing small customized documents, is the delays associated with obtaining such documents. Usually a 30 printing establishment requires at least one business day or more, to complete an order for customized, small documents.

Therefore, it would be highly desirable to supply a customer with small customized documents in a very fast 35 and convenient manner.

In this regard, it would be desirable to enable a person to receive the order for the documents in less than a day, and even during off hours, such as during the evenings, or weekends.

5 Disclosure of Invention

Therefore, the principal object of the present invention is to provide a new and improved document vending system, which facilitates the printing of small customized documents, in a convenient and efficient
10 manner, and which enables a person to purchase a very small quantity, such as ten copies, in a cost effective manner.

Another object of the present invention is to provide such a new and improved document vending system
15 and method, particularly useful in preparing multiple numbers of smaller customized documents, such as business cards, in a very fast, inexpensive and efficient manner, even during off-hours and weekends.

Briefly, the above and further objects of the
20 present mention are realized by providing a new and improved method and system for vending small customized documents such as business cards, changes of address post cards or the like, in a relatively fast, convenient and inexpensive manner.

25 The document vending system includes a document vending terminal or station which may be conveniently and easily installed at any public location. In the preferred form of the invention, the system is used to produce and to vend customized small documents. In such
30 an arrangement, there is provided a self service document terminal which includes a data processing computer, which is used by the customer in a self-service manner. A credit card acceptor mechanism, and a bill and coin acceptor mechanism, enables the customer to pay for the
35 use of the vending system. A video display presents

sales and inquiry information for the customers. A paper feeding mechanism and a printer dispensing mechanism furnish the customer with the customized small documents ordered.

5 In its operation, the system carries out the following steps for producing and vending the customized documents:

1. Queries from a customer are accepted by the self service document vending terminal as to which the
10 type of small document needed;

2. The terminal solicits any necessary information from the customer in order to answer the queries;

3. Customer information and queries are transmitted to the data processing computer;

15 4. Relevant data is transmitted from the data processing computer regarding quantities, type styles, etc. and transmitted to the video terminal for responding to the customer;

5. If the customer elects to make a purchase of
20 the customized documents, such as business cards, in response to the data received, the system receives the customer's monetary remittance either in cash or by credit card, and returns the required change, if any, to the customer; and

25 6. On receipt of the appropriate monetary remittance, whether by cash or credit card, the requested customized documents are dispensed to the customer.

The system saves considerable money and time for the customer. In this regard, the customer is not required
30 to order a large minimum number of small documents. Instead, the customer is required to order only a minimum single sheet document which may be separated into a multiple number (e.g., ten) of small documents. Such multiple number may be as small as ten, without having to
35 charge a premium for the small quantity. Moreover, the

customer may obtain the desired customized documents at any time, day or night, and even on the weekends. The terminals are located at convenient locations.

The terminal computer processing unit stores
5 information on the types of documents, styles and prices for vending the customized documents which may be requested and dispensed. This processing unit is also programmed to gather a predetermined sequence of
10 information from a customer regarding the customized documents (business cards, postcards, etc.) that the customer desires. The information entered and gathered at the terminal is processed and transmitted via a video monitor to display quotation and other pertinent information to the customer that enables the terminal to
15 process the document request initiated by the customer. Subsequently, the terminal is programmed to accept an order from the user for the offered customized documents, to collect payment, either by credit card or cash, and to vend the requested materials to the customer.

20 Thus, a customer is asked pertinent questions regarding information necessary to process a quotation for the type of small documents need, (business cards, postcards, etc.), the customer has selected. The gathered information is sent to the terminal computer
25 where the quotation is processed and transmitted back to the video monitor. The customer is then given an opportunity to purchase the selected items. If a set of business cards, postcards, etc. are desired, the system accepts the customer's payment, verifies the correct
30 amount has been received, returns any necessary change, and prints and vends the requested documents with the information provided by the customer.

In view of the foregoing, the system of the present invention enables customized small documents to be
35 prepared and supplied to the customer while the customer

waits, in a matter of minutes. Since the document vending system can easily determine the type and quantity of customized documents produced according to fixed parameters, the prepared documents can be accounted for
5 and are thus, charged to the customer in a fast, convenient, self service mode of operation.

Brief Description of Drawings

The above mentioned and other objects and features of this invention and the manner of attaining them will
10 become apparent, and the invention itself will be best understood by reference to the following description of the embodiment of the invention in conjunction with the accompanying drawings, wherein:

FIG. 1 is a block diagram of a small document vending system according to the present invention;
15

FIG. 2 is a pictorial view of the small document vending terminal of FIG. 1;

FIG. 2B is a block diagram of the video subsystem of FIG. 1;

20 FIG. 2C is a block diagram of the card dispenser unit of FIG. 1;

FIG. 2D is a face plan view of a sheet of customized small documents prepared by the document vending system of FIG. 1; and

25 FIG. 2E is a face plan view of a blank sheet of paper stock use by the card dispenser mechanism of FIG. 2C to prepare the customized document of FIG. 2D.

Best Mode for Carrying Out the Invention

The following description is presented and organized
30 according to the following outline:

- A. HARDWARE DESCRIPTION
- B. SYSTEM OPERATION
- C. SYSTEM COMPUTER SOFTWARE
- D. CUSTOMIZED DOCUMENTS

A. HARDWARE DESCRIPTION

Referring now to FIG. 1 of the drawings, there is shown a computerized document vending system 11A, which is constructed in accordance with the present invention and which is adapted to produce and to vend customized documents to a customer (not shown).

Considering now the inventive document vending system 11A, in greater detail with reference to FIG. 1, the system 11A generally includes a self service sales and information terminal housing 11 for enclosing personal computer CPU 12 and modem 24. The personal computer CPU 12 is an IBM PS-2 model M25 or equivalent and includes a video subsystem 15, keyboard 17 and a storage media unit 23. The video subsystem 15 includes a conventional video monitor 29. The video subsystem 15 is manufactured by IBM for use with the IBM PC-AT compatible personal computers.

The keyboard 17 is a customized keyboard for use with the IBM PC-AT type personal computer and is described in copending U.S. patent application Serial No. , filed on October , 1989. The personal computer CPU 12 is connected to an interface unit 13 for enabling a customer user of the system to solicit sales information and to purchase various types of printed documents in the form of change of address postcards and customized business cards, and other similar documents. The sales and information terminal 11 is installed at various convenient locations, such as post offices, shopping malls, and so on. In this regard, the terminal is designed to provide the same level of service as would a well informed sales representative and to interface with the customer by means of the communications and peripheral communication subsystem 14.

The interface unit 13 is also connected to the system peripherals that include a bill/coin acceptor 18,

a printer 19, a credit card acceptor 21, a card dispenser 22, and a customer actuation switch 20.

The interface unit 13 enables the personal computer CPU 12 to sense the activation of a customer actuation switch 20 and to coordinate the operation of the bill/coin acceptor 18 and credit card acceptor 21 with the other peripheral units of the system 11A.

The basic customer information gathered at terminal 11 includes the name and address of the customer, and other relevant information pertaining to the type of document the customer desires to have prepared. For example, if a business card is to be prepared, the customer would supply the name and address of the business. The business telephone number, etc.

Once the basic customer information is gathered, the document vending system 11A produces a quotation for the customer's approval and, if accepted by the customer remitting payment either in cash or by credit card, vends the requested document(s).

20 C. SYSTEM COMPUTER SOFTWARE

The various programs for carrying out the operations of system 11A are of a "menu type" and can best be understood with reference to the foregoing mentioned co-pending U.S. patent applications.

25 D. CUSTOMIZED DOCUMENTS

Considering now the customized documents prepared by the document vending system 11A in greater detail with reference to FIGS. 2D and 2E, after the customer has remitted payment for his or her selected documents, the system software causes the card dispenser mechanism 22 to print and vend the customized documents ordered by the customer. In this regard, the card dispenser mechanism 22 includes a printer 22A for printing a customized document, such as document 230 shown in FIG. 2D. Printer 22A includes a pair of document feeders, such as document

feeders 22B and 22C as shown in FIG. 2C. Document feeders 22B and 22C contain an inventory stock of pre-perforated paper such as a sheet 270 shown in FIG. 2E. It should be understood that various different pre-perforated paper inventory stock could be provided with the system depending on the type of small documents the system will vend. In the preferred embodiment of the present invention a inventory stock of single sheets of pre-perforated paper, such as sheet 270, is preferred.

5
10 Considering now the customized document 230 in greater detail with reference to FIG. 2C the customized document 230 in generally composed of a heavy weight paper typical used for preparing business cards and the like. The customized document 230 is generally
15 rectangular in shape have a upper edge portion 231, a lower edge portion 232 and a pair of side portions 233 and 234. A vertical perforation line 235 that includes a multiple number of micro-perforations extends from the upper edge portion 231 to the lower edge portion 232.
20 The vertical perforation line 235 subdivides the customized document 230 into a right side portion 236 and a left side portion 237.

The customized document 230 also includes a set of equally spaced apart horizontal preformation lines 238, 239, 240, 241, 242, and 243 respectively. Each of the horizontal perforation lines 238-243 include a multiple number of micro-perforations which extend from the right side portion 244A to the left side portion 244B to subdivide the customized document 230 into seven (7)
30 portions shown generally at 244-250.

The customized document 230 also includes a pair of spaced apart vertical perforation lines 244A and 244B which also extend from the upper edge portion 231 to the lower edge portion 232. Vertical perforation line 244A
35 is disposed adjacent and parallel to edge 234 of document

230 to form a left stud portion 250A. Similarly the vertical perforation line 244B is disposed adjacent and parallel to edge 233 of document 230 to form a right stud portion 250B.

5 The vertical perforation line 235 intersects each of the horizontal perforation lines 238-243 to divide each perforation line 238-243 into two equal parts to form twelve (12) document portions 251-260 and 250A and 250B. Each document portion 251-260 is substantially identical
10 and only document portion 256 will be described herein after in greater detail.

 Considering now document portion 250A in greater detail with reference to FIG. 2D, document portion 250 is generally rectangular in shape and is removable from
15 document 230 when document 230 is folded along line 244A. In this regard portion 250A may be torn from the left portion 237. Similarly when document 230 is folded along 244B the portion 250A may be torn from the right portion 236.

20 Considering now document portion 256 in greater detail with reference to FIG. 2D, document portion 256 is generally rectangular in shape and includes disposed thereon two grouping of indicia 261 and 262. Indicia 261 and 262 are in the form of characters, symbols and signs
25 which define a group of letters used in the english language. Indicia 261 includes three two types of indicia: bold indicia 263 and small indicia 264. The bold indicia 263 is more pronounced or darker than the small indicia 264. In addition, the bold indicia 263 is
30 larger in size that the small 264. In this regard, the indicia 261 has been customized not only with the name of the customer, but also customized as to style. Indicia 262 is similar to indicia 264 and will not be described hereinafter in greater detail.

Considering now the blank sheet of paper stock 270 in greater detail with reference to FIG. 2E, the blank sheet of paper stock 270 is substantially identical to the customized document 230 except it does not include the indicia grouping, such as indicia 261 and 262. In this regard, it contains a centrally disposed vertical perforation line 290, a pair of equally spaced apart vertical perforation lines 290A and 290B and a set of horizontal perforation lines 291-296. It should be noted however, that the paper stock 270 is so constructed that it may be separated or torn into two groupings of equal sized small: a small grouping 271 and 272 a stud group 271A and 272A, and a large grouping shown generally at 273.

The small grouping 271 contains two small documents 274 and 275 while small grouping 272 contains two small documents 276 and 277. Similarly the large grouping 273 contains ten (10) documents shown generally at 278-287, which are substantially larger than documents 274-277.

In order to separate the blank sheet 270 into the separate documents 274-287 a user or customer of the small document vending machine folds the document 270 along line 290 and tears the document 270 along line 290 to divide the document 270 into two parts, a right part 270A and a left part 270B. The user then separates either the right part 270A or the left part 270B into its component small documents. As the method for separating the right or left parts into small documents is substantially identical only the method of separately the right part 270A will now be considered in greater detail.

Considering now the method of separating the right part 270A into small documents in greater detail with reference to FIG. 2E, the user first folds the document along perforation line 290B and separates the right stud portion 272A from the remaining right side portion. The

user may then choose any one of horizontal fold lines for commencing the separating operation. For example, the user may start a line 291 by fold the small document along line 291 and then tearing the document 275 from document 283. Document 283 is then folded along line 292 and torn from document 284. Document 284 is then folded along line 293 and torn from document 285. Document 285 is then folded along lone 294 and torn from document 286. Document 286 is then folded along line 295 and thorn from document 287. Document 287 is then folded along line 296 and torn from document 277. In this manner the user or customer obtain seven small documents 275 and 277 composed of one size and documents 283-287 composed of another size.

15 In view of the foregoing it should be understood that various sized small documents may be easily and convenient prepared in an extremely fast and efficient manner. For example, the card dispensing mechanism is capable of preparing eight sheets of customized documents, such as document 230, per minute. In this regard, if a blank paper stock in the form of sheet 270 was utilized a customer could be vended, after entering the appropriate customer information approximately eighty (80) business cards per minute. It should be understood that the customer or user would only need to purchase one customized document.

While particular embodiments of the present invention have been disclosed, it is to be understood that various different modifications are possible and are contemplated within the true spirit and scope of the appended claims. There is no intention, therefore, of limitations to the exact abstract or disclosure herein presented.

What is claimed is:

Claims

1. A system for vending customized small documents, comprising:

5 terminal means for gathering customized data for preparing customized small documents;

means for storing the gathered information;

said terminal means including a printer for printing customized documents seriating;

10 said terminal means including sheet feeding means for feeding at least one sheet of pre-perforated paper stock to said printer;

said pre-perforated sheet of paper stock having a plurality of micro perforations configured in the shape of a multiple number of small documents.

15 2. A system according to claim 1 wherein said terminal means includes processor means for calculating product quotations for printing customized small documents.

20 3. A system according to claim 1 wherein said terminal means further includes a card dispensing device for vending sheets of pre-perforated paper including customized indicia thereon.

25 4. A system according to claim 1 wherein said terminal means comprises:

means for receiving and storing document pricing information for generating messages for use by a customer; and

30 means for gathering basic customer information concerning for preparing a customized document.

5. A system according to claim 4 wherein said means for gathering basic computer information includes means for determining service quotations for determining product qualifications for printing customized documents;

35 means for determining customer acceptance of said

quotations; and means for vending customized documents upon payment of the quotation amount by said customer.

6. A system according to claim 4 wherein said means for gathering basic customer information includes
5 video display means for displaying customer messages and an input keyboard for entering data from said customer;
means for determining the acceptance of an offered quotation for a selected number of customized documents, said means for determining generating a signal
10 indicative of the acceptance of said quotation; and means responsive to said signal for determining the receipt of the correct payment corresponding to said quotation.

7. A document vending terminal comprising:
15 input means for gathering basic customer information, said information including customer information and business information;
means for storing the gathered information; and
means responsive to said gathered information
20 for determining quotation information to facilitate the printing of customized documents for a given customer.
8. A document vending terminal according to claim 7 wherein said input means includes a personal computer and a computer keyboard forming part of said
25 personal computer.

9. A document vending terminal according to claim 8 wherein said personal computer includes a computer processor unit coupled in communication with said keyboard.

- 30 10. A document vending terminal according to claim 7 further including credit card acceptor means for accepting payment by a given customer and document vending means for printing and vending customized documents.

11. Method for using a small document vending system to prepare a multiple number of small customized documents comprising:

- entering customized data into the vending system for use of a small customized document;
- causing a printer to print the customized data on a pre-perforated sheet of paper in stock having at least one line of micro-perforation for separating said sheet into at least two small documents; and
- separating said pre-perforated sheet of paper stock into a multiple number of small documents by tearing said paper stock along said line of micro-perforations.

12. A sheet of small documents produced by the method of claim 11.

AMENDED CLAIMS

[received by the International Bureau on 19 March 1993 (19.03.93);
original claims 1-12 replaced by amended claims 1-9 (4 pages)]

1. A system for vending a customized user composed document, comprising:
 - free standing terminal means for facilitating the preparation of the customized document;
 - said free standing terminal means including manually operable input means for gathering user generated composition information to compose the customized document; processor means for generating cost information for using the terminal to vend at least one customized document, said processor means including memory means for storing the customized composition information; printer means for printing at least one customized document composed with the gathered user composition information; user actuation means for causing said printer means to deposit indicia onto paper stock, said indicia being indicative of the user generated composition information; payment acceptance means for receiving a payment from the user and for generating a document vending initiation signal; paper feeding means for feeding a sufficient quantity of paper stock to said printer means to produce at least one customized document; means responsive to said signal for causing said paper feeding means to feed a sufficient quantity of paper stock to said printer means and for causing said printer means to print a given number of composed documents, said given number of the composed document being indicative of a customer requested number of documents to be vend; and
 - means for displaying an image indicative of the cost for vending the customized document.
2. A system according to claim 1, wherein said processor means includes means for receiving and storing document pricing information for facilitating the displaying of user information helpful in using the system.

3. A system according to claim 1, wherein said manually operable input means is keyboard means.

4. A system according to claim 1, wherein said payment acceptance means includes credit card acceptor
5 means for accepting payment from a user.

5. A system according to claim 1, wherein said processor means further includes means for storing prestored information and means for composing the customized user composed document with the gathered user
10 generated composition information and the prestored information.

6. A system according to claim 1, further including means for storing said paper stock, said paper stock being arranged in at least two separate groups for
15 use in producing different types of customized documents.

7. A method for vending a customized user composed document, comprising:

displaying an image indicative of the cost for vending at least one customized user composed document;

20 gathering user generated composition information from a user to compose the customized document with the composition information;

feeding a sufficient quantity of paper stock to printer means to produce at least one customized
25 document; and

causing said printer means to deposit indicia onto said paper stock, said indicia being indicative of the user generated composition information.

8. A method for vending a customized user composed
30 document according to claim 7, further comprising:

using terminal means for facilitating the preparation of the customized user composed documents;

generating cost information for using said terminal means to produce a given number of the
35 customized document;

displaying cost information and user
information helpful in using said terminal means to
produce the customized user composed document;

receiving payment from the user; and
5 generating an initiation signal to cause said
printer means to print at least one customized user
composed document.

9. A vending system for a customized user composed
document, comprising:

10 terminal means for facilitating the preparation
of the customized user composed document;

said terminal means including video means for
displaying user information helpful in using the system;

manually operable input means for gathering
15 user generated composition information from a user to
compose the customized document with said composition
information; and

user interface means for causing the user
generated composition information to be stored
20 temporarily for printing purposes;

computer means responsive to said user
interface means for formatting the user generated
composition information into a customized format
arrangement for the customized document;

25 a plurality of groups of single sheets of paper
stock for receiving thereon indicia;

memory means for storing the gathered user
generated composition information;

printer means for printing at least one
30 customized document composed with the gathered user
generated composition information;

sheet feeding means for causing individual ones
of the single sheets of paper stock to be supplied to
said printer means for printing purposes; and

activation means for causing said printer means
to deposit indicia onto at least one of the single sheets
of paper stock, said indicia being indicative of the user
generated composition information and being arranged on
5 the sheet in said customized format.

11A

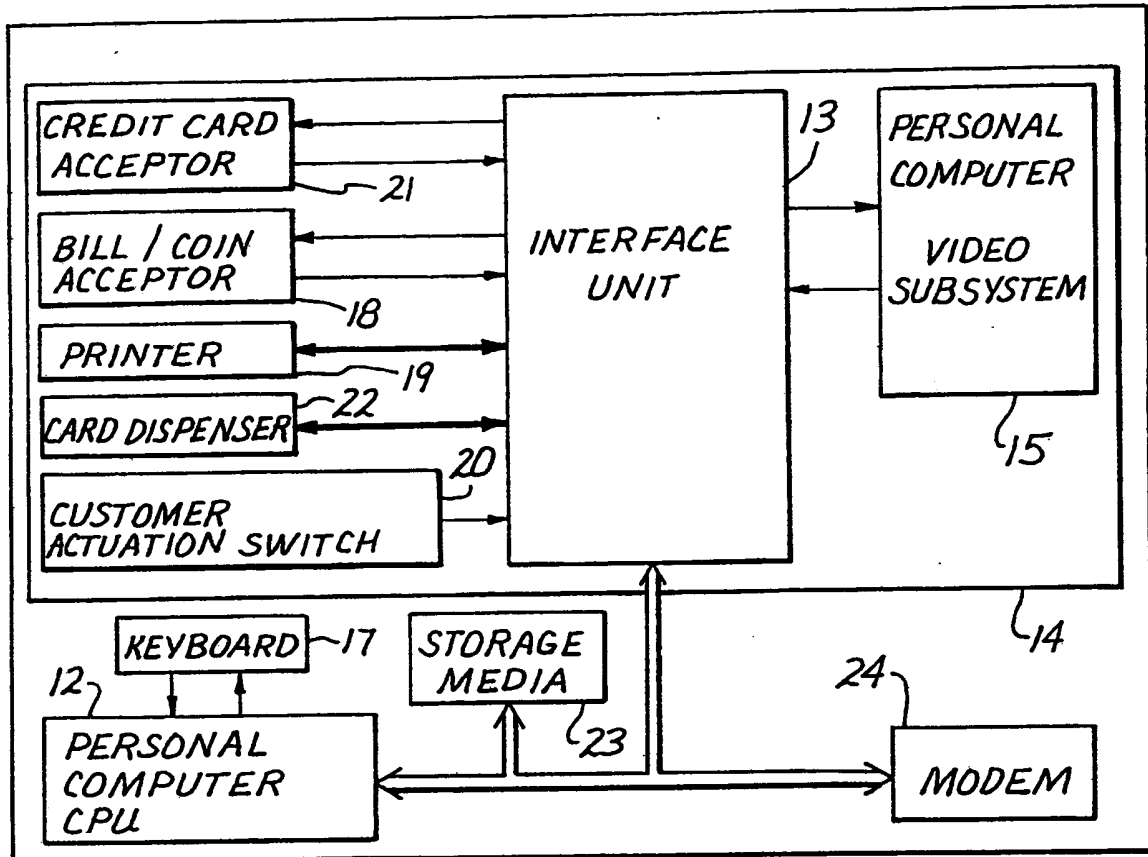


Fig. 1

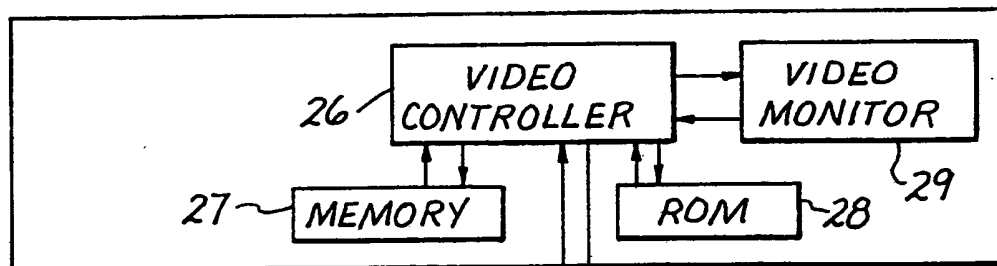
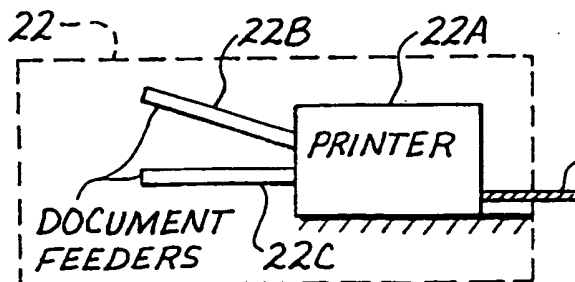
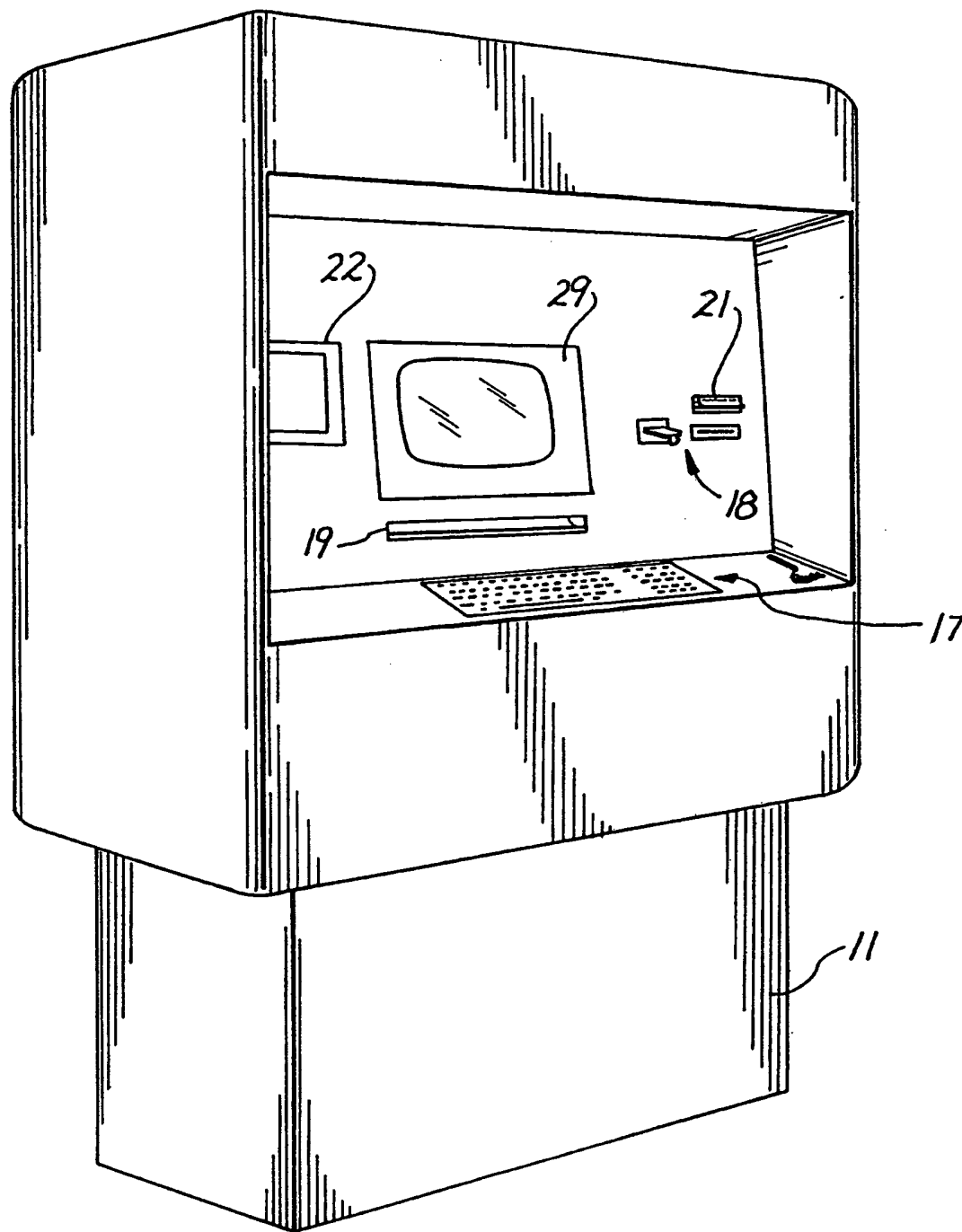


Fig. 2B



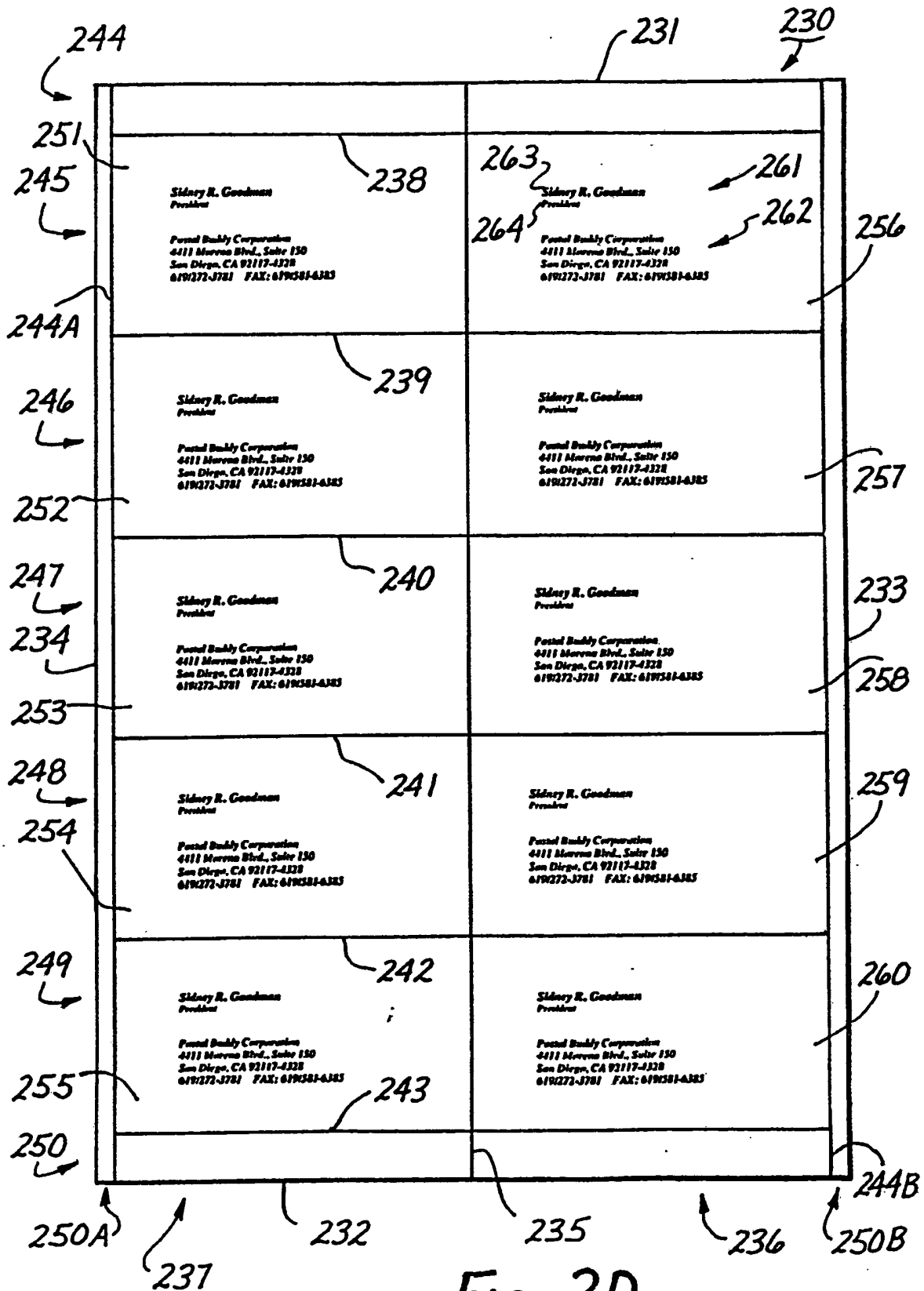
TO INTERFACE UNIT 13

Fig. 2C



IIA

Fig. 2



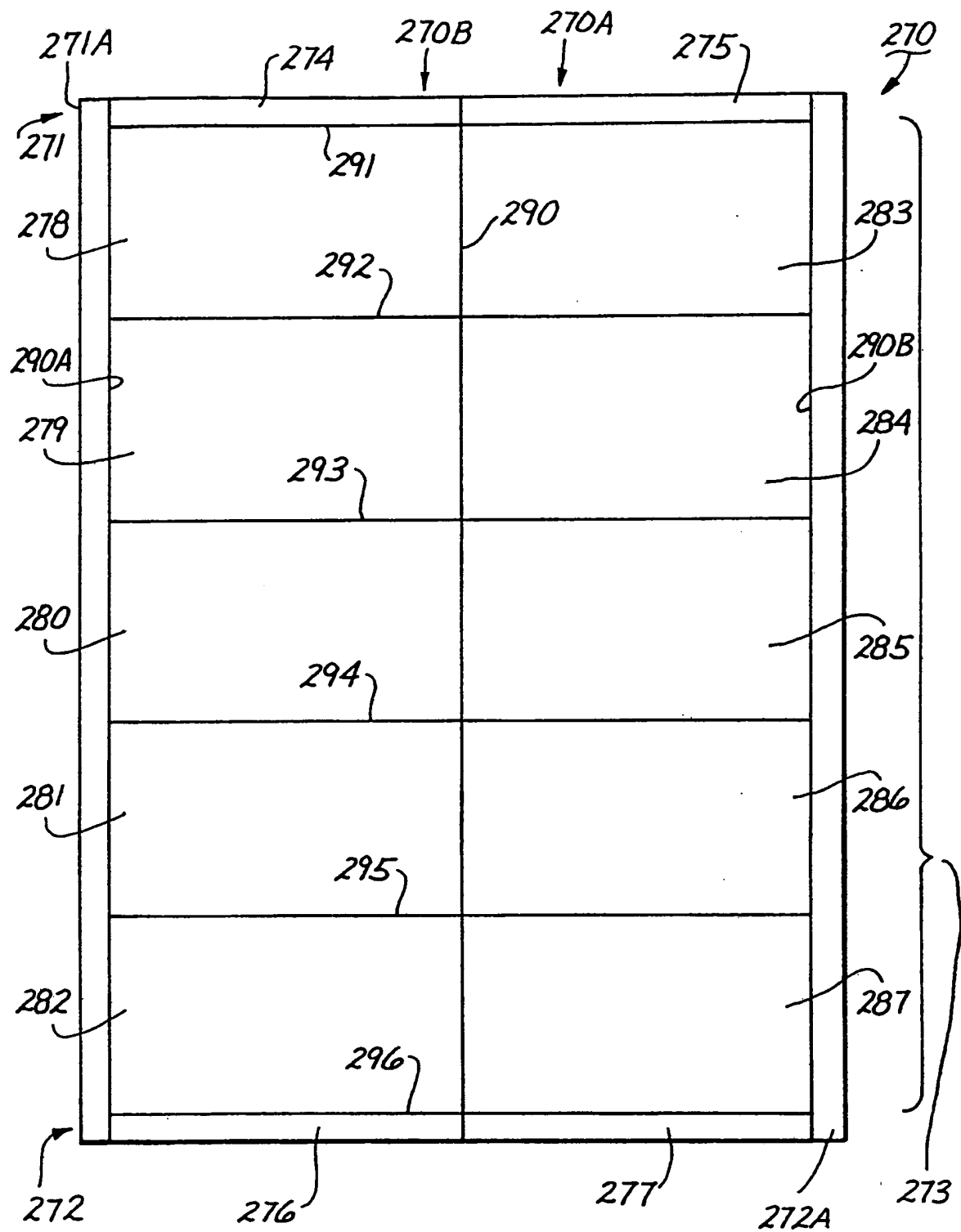


Fig. 2E

INTERNATIONAL SEARCH REPORT

PCT/US92/08672

A. CLASSIFICATION OF SUBJECT MATTER

IPC(5) :G06F 15/20; G07F 11/68, 11/70

US CL :364/479,471

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 364/188,235/381,222/93.07

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US,A, 4,677,565 (Ogaki et al.) 30 June 1987, See abstract and invention summary.	1,4,7,10
Y	US,A, 4,873,643 (Powell et al.) 10 October 1989, See entire document and col. 1, lines 55-60.	1-12
X	US,A, 5,036,472 (Buckley et al) 30 July 1991 see fig. 10A, column 11, lines 3-20, and invention summary.	1,3,4,7-12
X	US,A, 5,038,293 (Goodman) 06 August 1991, See entire document.	1-12
Y	US,A, 5,056,029 (Cannon) 08 October 1991, See abstract and claims.	1-12

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:	T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be part of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Z"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search
17 NOVEMBER 1992

Date of mailing of the international search report

Name and mailing address of the ISA/
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. NOT APPLICABLE

Authorized officer *my maw*
PAUL GORDON
Telephone No. (703) 308-2873

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US92/08672

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y,P	US,A, 5,088,586 (Isobe et al.) 18 Febuary 1992, See column 2, lines 33-68 to column 3, lines 1-22.	1-12